

CLAIMS

What is claimed is:

20. A rheoplectic abrasive visco-elastic medium composition for abrasive working of a work piece comprising:

A. a visco-elastic poly(boro-siloxane) polymer carrier having a static viscosity of from about  $\eta = 5 \times 10^3$  Centipoise to about  $\eta = 5 \times 10^5$  Centipoise;

B. a particulate abrasive;

C. an optional inert filler in an amount of up to about 25% by weight of said medium;

D. an optional plasticizing lubricant for said visco-elastic polymer in an amount of up to about 25% by weight of said medium;

E. said medium having a static viscosity of from about  $\eta = 2 \times 10^4$  Centipoise to about  $\eta = 8 \times 10^6$  Centipoise, said medium containing a total volume of said particulate abrasive and of said inert filler is less than the critical particulate volume of said medium; and

F. said visco-elastic abrasive medium having from 50% to about 99% deflection by elastic deformation, and 1 to 50% of the deflection of the medium by fluid or plastic flow, when subjected to applied strain rates greater than about  $2.5 \text{ sec}^{-1}$ .

21. The medium composition of Claim 20 wherein said visco-elastic abrasive is a material selected from the group consisting of alumina, silica, garnet, silicon carbide, diamond, tungsten carbide and mixtures thereof.

22. The medium composition of claim 20 wherein said abrasive particles range from about 1 to about 2000 micrometers in their greatest dimension.